

NOTES ON NEOTROPICAL ONYCOPHORA¹

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During the course of the past year I have received for identification several lots of Onycophora collected in Panama, Colombia, British Guiana and the West Indies. These have come from several sources; from the University of Michigan Museum collected by F. M. Gaige, from the U. S. National Museum collected by W. M. Mann and T. E. Snyder, and one from the American Museum of Natural History collected by F. E. Lutz. Other examples were obtained by W. M. Wheeler, T. Barbour and J. B. Shropshire.

This material adds considerably to our knowledge of the distribution of the group in the American tropics and it contains one well marked variety from Panama which has not hitherto been described.

Oroperipatus corradoi Camerano

Boll. Mus. Zool. Anat. Torino, vol. 13, No. 316, p. 2 (1898).
Bouvier, Monog. Onycophores, Ann. Sci. Nat. (9), vol. 2, p. 120 (1905).

There are two females in the collection of the Museum of Comparative Zoology, obtained by Dr. Thomas Barbour in the Canal Zone, Panama. The species was known by Bouvier from Ecuador where it ranges from the sea-coast into the high mountains at Quito, and has since been reported by Clark from Ancon, Canal Zone, Panama.

The present specimens seem to be referable to *O. corradoi* although as Bouvier has already indicated this species is very similar to *O. eiseni* Wheeler described from Tepic, Mexico and since reported from Rio Purus in the Amazon basin in Brazil. He even suspected that intermediate forms might be found in the intervening territory from Mexico to Ecuador. These examples fall much closer to *corradoi* as the nephridial tubercles of the fourth and fifth pairs of legs are completely fused with the larger portion of the third creeping pad and the smaller part of

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the pad is distinctly larger than the tubercle. The width of the creeping pads is used by Bouvier as a diagnostic character for the separation of the two species but the form of these in the present specimens do not appear to indicate a clear relationship in either direction. Both females measure about 60 mm. in length in a fully expanded condition and have 28 pairs of legs, a typical number for either species.

Peripatus (Macroperipatus) geayi Bouvier.

R. Acad. Sci. Paris, vol. 128, p. 1345 (1900)

Bouvier, Monog, Onycophores, Ann. Sci. Nat. (9), vol. 2, p. 200 (1905)

Clark, Smithsonian Misc. Coll., vol. 60, No. 17, p. 2 (1913).

Two large females from the Santa Marta Mountains, Colombia, June 6 and 22, 1920 (F. M. Gaige.)

Both measure fully 60 mm. in length and have 31 pairs of legs. They agree well with Bouvier's description of the single type from French Guiana in all details, except in color. The type was evidently completely decolorated as the present specimens show distinct indications of a series of lozenge-shaped markings along each side of the median line and a very distinct interrupted dorsal transverse pale band behind the head almost exactly similar to the band of *P. torquatus*. Possibly this collar may indicate a color variety as it is described by Clark (1913) as present in a specimen from La Chorrera, Panama which examined and referred to this species. The head and antennæ are extremely dark in the present examples and the band so much lighter than the body behind it that one would not expect it to disappear entirely even in specimens so completely decolorated that the lozenge-shaped markings are practically faded out. Nevertheless, Bouvier makes no mention of such a band and speaks of the antennæ as darker than the head, which suggests strongly that the western form may be distinguishable on this color character. On the other hand there is with one of the Colombian examples, a very poorly preserved specimen quite possibly of this species which shows no indication of any pale band; it appears also to be a female.

Another very large female with 31 pairs of legs from the Cincinnata Coffee Plantation near Santa Marta, Colombia collected by Dr. Wm. M. Mann may be referable to this species. It measures fully 90 mm. in length, with dark beaded median dorsal line and clearly marked lateral broad dark wavy band, dark head and antennæ and narrowly interrupted pale collar. The integumentary papillæ are not separated by clearly marked grooves as in the other examples although these show in some places.

Four other specimens (three collected by F. M. Gaige and one by W. M. Mann) are by no means typical in the arrangement of the integumentary papillæ, but they show the characteristic pale collar and as they are also from the Santa Marta Mountains, Colombia are probably referable to this species. The papillæ are very indistinctly or not at all separated by transverse grooves and the integumentary folds thus resemble those of *P. (Epiperipatus) edwardsii* and related forms. Most of these specimens are strongly contracted which probably accounts to some extent for their different appearance and a larger series of well expanded examples will be necessary to determine to what extent the character separating *Macroperipatus* and *Epiperipatus* may be relied upon in the classification of the species referred to these two groups.

***Peripatus juliformis* Guilding, var *danicus* Bouvier.**

This form was based on a male and female from the Island of St. Thomas which Bouvier regarded as a variety of *P. juliformis*. Later Clark (Smithsonian Misc. Coll., vol. 60, No. 17, p. 4) has elevated this to specific rank, apparently for geographic reasons.

In the present material there is a female from St. Croix, Virgin Islands collected by Dr. F. E. Lutz, bearing the label "Under rotten log, March 2, 1925." It is now in the collection of the American Museum of Natural History. It agrees well with Bouvier's description except that there are 32 instead of 33 pairs of legs, a common number for Jamaican examples of the typical *juliformis*. The body color is very dark, a rich

brownish purple with the papillæ much lighter, due probably to the decolorizing effect of the alcohol used for preservation.

The distribution of *P. juliformis* and *P. dominicæ* and their varieties overlap in this region as the former extends eastward from Jamaica through St. Croix to St. Thomas while the latter extends westward from Dominica through Antigua to Porto Rico and to Haiti. So far as I know this is the first specimen of *Peripatus* to be taken on St. Croix.

***Peripatus (Epiperipatus) brasiliensis* Bouvier.**

C. R. Acad. Sci. Paris. vol. 129, p. 1031 (1899)

Bouvier, Monog. Onycophores, Ann. Sci. Nat. (9), vol. 2, p. 269 (1905)

The types and nearly all of the material of this species seen by Bouvier were from Santarem in the lower Amazon area of Brazil, but he referred a single specimen from Panama to this species with some doubt. Since then the species has been reported from Merida in the interior of western Venezuela.

Recently a number of specimens have come into my hands as the result of collecting by several naturalists at and near the Barro Colorado laboratory in the Canal Zone. A prolonged and careful examination of these has led me to the conclusion that they may be more or less clearly distinguished from the Amazonian representatives of *P. brasiliensis*. Unfortunately no examples of the latter are available for comparison, and it has been necessary to rely upon Bouvier's extended description of the latter for comparison. As will be shown later, the Panamanian form seems to approach *P. imthurmi* in some respects although it could not possibly be referred to this common Colombian species. Certainly it cannot be regarded as a distinct species, but as it seems to represent a well marked geographical race common in a district far removed from the type locality of *P. brasiliensis* it may be best known by a distinctive name.

***Peripatus (Epiperipatus) brasiliensis* Bouvier, var *vagans*,
var. nov.**

♀. Length when well extended 65 mm. and probably considerably more to judge from one large contracted specimen.

Tegumentary folds complete on the anterior and middle part of the body, except that there may be very rarely an incomplete fold which bears no relation to the insertion of the legs; posterior third or quarter of body with an incomplete fold more or less regularly on the flank about halfway between each leg and the median line. Anteriorly there is commonly a fusion of two ridges above the leg but in such cases one of the adjacent ridges bifurcates downwards at this point and the number of ridges is not decreased. The primary papillæ vary markedly in size, frequently but not always there is one or there may be two smaller ones between two adjacent large ones. The accessory papillæ are quite numerous, more so in larger specimens and they frequently ascend well on to the ridges often in a pair (one anterior and one posterior) between two primary papillæ. On very large specimens there are occasional groups of three or even four accessory papillæ in groups between adjacent primary ones in addition to a scattering of accessory ones along the edges of the fold. In the largest specimens the primary papillæ are of nearly equal size. Nephridial tubercle on fourth and fifth legs lying in a distinct but not deep emargination of the third creeping pad, the fourth pad usually but little shorter than the third, but much narrower and deeply emarginate next to the tubercle which, however, does not divide the pad. The number of legs varies from 33 to 30 pairs, 32 in the type and 32, 32, 33, 33, 30 and 30 in the paratypes.

♂. The male measures 25-50 mm. in length, with 29 pairs of legs. It is essentially similar to the female although one is evidently not fully grown as the form and arrangement of the papillæ resemble those of the smaller females. The larger specimen shows three small primary papillæ between the larger ones.

There are in all eight specimens as follows: Barro Colorado Island, Canal Zone, Feb. 6, 1924 (T. E. Snyder) (type); Barro Colorado Island, Canal Zone, Feb. 26, 1924 (T. E. Snyder); Rio Tapia, Panama, Feb. 7, 1924 (T. E. Snyder); two from Las Cascadas, Canal Zone, Feb. 12, 1924 (T. E. Snyder); two from Fort Sherman, Canal Zone, February 1924 (J. B. Shropshire); Rio Chinilla, Canal Zone, Feb. 22, 1924 (T. E. Snyder); Barro

Colorado Island, Canal Zone, Feb. 22, 1924 (W. M. Wheeler). The last two are males.

The variety *vagans* may be distinguished from the typical *P. brasiliensis* first by the tendency for pairs of the transverse integumentary folds to fuse above the base of the legs on the posterior part of the body, a condition that has not been found in the typical form where the rare cases of fusion or incomplete folds are irrespective of the bodily segmentation. It differs also in the much greater development of the accessory papillæ which approach the condition found in *P. imthurmi*. The latter form has however, incomplete folds regularly on each segment.

Epiperipatus (Peripatus) inthurmi Sclater.

Quart. Journ. Micros. Soc., vol. 28, p. 343 (1888)

Bouvier, Monog. Onycophores, Ann. Sci. Nat. Zool., (9) vol. 2, p. 275 (1905)

One female from the Cincinnati Coffee Plantation, Santa Marta Mts. Colombia (F. M. Gaige).

Six females from Dunoon, British Guiana (F. M. Gaige), obtained by the Walker Expedition in 1914. These range in size from 25-65 mm. in length; five have 31 pairs of legs and one 29 pairs.

Peripatus (Epiperipatus) edwardsii Blanchard

Ann. Sci. Nat. Zool. (3) vol. 8, p. 140 (1847)

Bouvier, Monog. Onycophores, Ann. Sci. Nat. Zool. (9) vol. 2, p. 301 (1905).

One large and one very small female from the Santa Marta Mountains, Colombia (F. M. Gaige).

Peripatus (Epiperipatus) isthmicola Bouvier.

Monog. Onycophores, Ann. Sci. Nat. (9) vol. 2, p. 329 (1905).

Clark. Smithsonian Misc. Coll., vol. 65, No. 1, p. 24 (1915).

This form was regarded as a variety of *P. nicaraguensis* Bouvier by Bouvier, but has since been listed as a distinct species by Clark (*loc. cit.*)

Four females collected by Dr. Wm. M. Mann at Columbian Farm, Santa Clara, Costa Rica and a male sent later collected by Mr. P. Siggas at the same place.

These specimens agree well with Bouvier's description based upon five specimens obtained at three localities in Costa Rica. The females have 30, 30, 29 and 29 pairs of legs respectively and the male 27. All are of large size and well expanded, the females ranging from 65-73 mm. in length and the male is considerably smaller (48 mm.). The inner lamella of the mandible bears only one accessory tooth or may show the trace of a second very small one. In Bouvier's material most of the specimens showed a well developed accessory tooth but there seems to be no constant difference. The creeping pads on all the legs are rather narrow and the fourth is very small. On the fourth and fifth pairs of legs the fourth pad is always very much reduced and pushed to one side by the nephridial tubercle. Sometimes it is band-shaped, again rounded and no larger than the tubercle, and again has practically disappeared.

Peripatus (Epiperipatus) biolleyi Bouvier, var. **betheli**
Cockerell.

Proc. Biol. Soc. Washington, vol. 26, p. 87 (1913).

This species was described from a single female from the Atlantic seaboard of Guatemala at Puerto Barrios. Five specimens were obtained by Dr. Wm. M. Mann at San Juan Pueblo, Honduras and have been sent for study from the U. S. National Museum.

There are three females, each with 30 pairs of legs; they are in various stages of contraction and measure from 38-55 mm. in length. Two males are much smaller, 22-25 mm. and bear each 25 pairs of legs. All are considerably bleached by the alcohol in which they are preserved and in none are there any traces of a color pattern. The darkest specimen is distinctly brown and thus similar to the "dark wood brown" of the type as described by Cockerell. In the arrangement of the integumentary papillæ, nephridial tubercles, creeping pads and mandibular teeth all agree closely with Cockerell's description, except that in two specimens there are only eight minute teeth on the inner blade of the mandible.